Vol. 2 December 1938 No. 5.

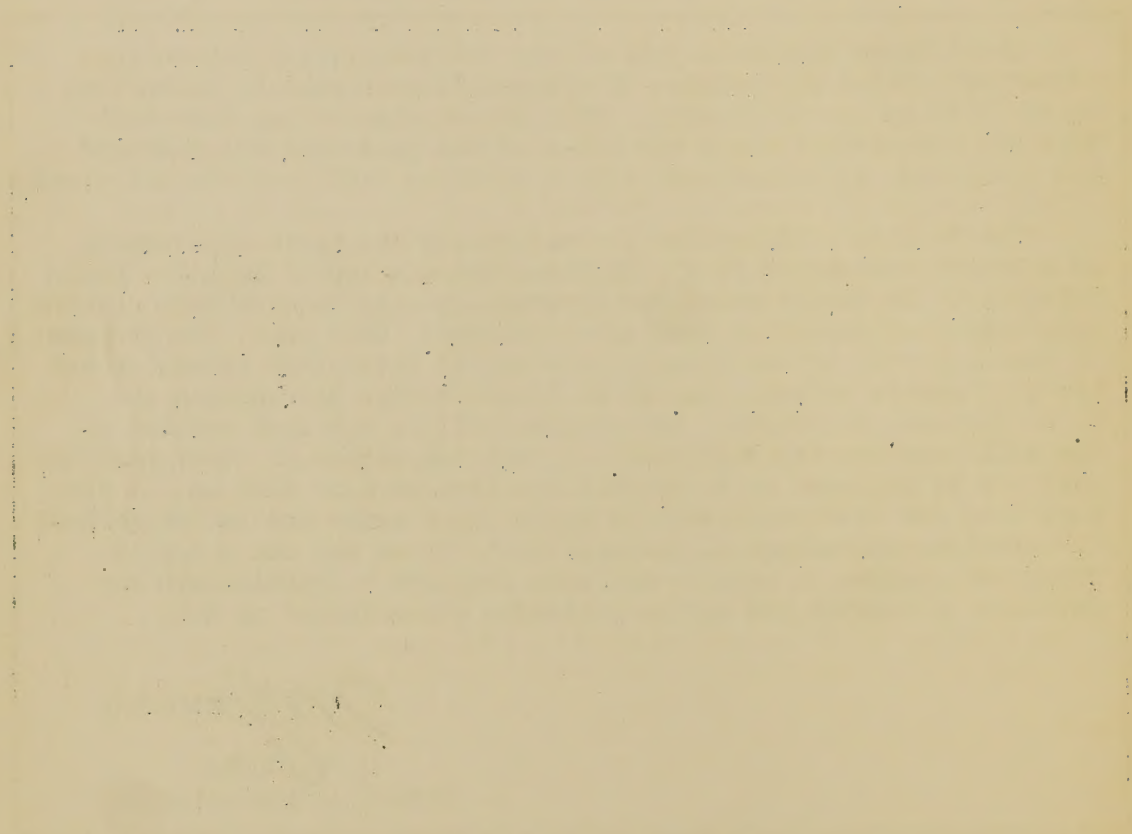
The EXTENSION ENTOMOLOGIST

The holiday season is just around the corner, but before this corner is rounded the results of the year's work must be summarized in the form of annual reports. This season also brings many meetings and conventions where the notes of the past year are compared and plans made to attack next year's problems with more vim and vigor.

The Section of Extension is celebrating its tenth anniversary as a branch recognized by the American Association of Economic Entomologists. In former years the programs of this Section have covered many phases of extension work in entomology. This year, the program is based on some of the broader problems of entomology extension and how they may be solved. Dr. W. E. Blauvelt will be chairman and W. C. Nettles, secretary. Our program will be the last session of the AAEE meetings for this year. I hope the strain of other sessions will not be so great as to prevent you from meeting with us. I also hope that our conference will bring to light newer and better methods of extending entomological information to those who can apply it. Study the program on page -- and come prepared to participate regardless of whether you are an extension entomologist or not.

M. P. Jones
Extension Entomologist

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE AND
EXTENSION SERVICE, COOPERATING



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PERSONNEL

Arizona. Mr. Ernest R. Tinkham has been appointed assistant entomologist of the agricultural experiment station on half-time research on the ecology and biology of range grasshoppers and half-time work as the State extension entomologist, effective October 1, 1938. Mr. Tinkham was head of the department of biology at the Billings Polytechnic Institute, at Billings, Mont. He is a graduate of the University of Alberta, 1927, and received his masters from Montana State College in 1928 and expects to receive his Ph.D. this winter from the University of Minnesota. For 3½ years he was stationed at Lingnan University, Canton, China, where he taught half-time for 1½ years in the biology department and did museum work and for the last 2 years was assistant curator of insects in the Lingnan Natural History Survey and Museum. While abroad he carried on expedition work in French Indo-China, Yunnan, and Formosa and did considerable research principally on Chinese Orthoptera.

ANNOUNCEMENTS

Meetings

The following meetings have been scheduled:

Dec. 26-30 At Richmond, Va., John Marshall Hotel, American Association of Economic Entomologists of the American Association for the Advancement of Science.

Feb. 21-23 At Tampa, Fla., Hillsboro Hotel, Cotton States Branch, American Association of Economic Entomologists.

Mar. 23-24 At St. Paul, Minn., Hotel Lowry, North Central States Entomologists.

Hotel reservations should be made early.

Film Strips

Prices for United States Department of Agriculture film strips for the fiscal year ending June 30, 1939, are about 10 percent lower than those in effect during the past year.

This year's contract was awarded to Photo Lab, Inc., 3825 Georgia Avenue, N. W., Washington, D. C. All orders for Department film strips should be forwarded direct to this firm. Department film strips are available on such subjects as soil conservation, farm crops, dairy farm animals, farm forestry, plant and animal diseases and pests, roads, farm economics, farm engineering, home economics, and adult and junior extension work.

Lecture notes are provided with each film strip purchased with the exception of those that are self-explanatory. New series are constantly under preparation.

The following film strips pertaining to the work of the Bureau of Entomology and Plant Quarantine are available:

Series		Price
151	The Anatomy of the Honeybee (31 frames)	$0.45
166	Cotton Bollweevil Control (41 frames)	.45
167	Transferring Bees to Modern Hives (49 frames)	.50
171	Diagnosis of Bee Diseases in the Apiary (58 frames)	.50
172	Handling Bees for Successful Beekeeping (38 frames)	.45
231	The European Corn Borer and His Work	)
232	Control of the European Corn Borer (55 frames)	) .50
234	Chicken Lice, Mites, and Other External Parasites (41 frames)	.45
236	Cattle Grubs or Heel Flies (24 frames)	.45
247	The Japanese Beetle (37 frames)	.45
261	The Embryological Development of the Insect (27 frames)	.45
284	Control of the Sweetpotato Weevil (45 frames)	.45
290	The Chinch Bug and How To Fight It (38 frames)	.45
296	Parasites of Sheep (25 frames)	.45
297	Parasites of the Horse (21 frames)	.45
346	First Lessons in Beekeeping (45 frames)	.45
351	The Screwworm and Related Blowflies (52 frames)	.50
353	Barrier Construction for Chinch-Bug Control (36 frames)	.45
357	4-H Club Work in Entomology (40 frames)	.45
359	Grasshopper Control by Cooperative Campaigns (43 frames)	.45
360	Grasshoppers and Their Control (41 frames)	.45
364	Controlling the Gypsy Moth (40 frames)	.45
365	The Mountain Pine Beetle (32 frames)	.45
366	Quarantine Control Measures Against the Pink Bollworm (40 frames)	.45
369	The Dutch Elm Disease in the United States and Methods of Eradication (49 frames)	.50
370	Saving Our White Pines From the Blister Rust (49 frames)	.50
371	Pink Bollworm Control in the Big Bend Area of Texas(31 frames)	.45
372	The Bollweevil and Research Methods at Tallulah, La. (58 frames)	.50
373	The Pink Bollworm - How Infestations Are Located (35 frames)	.45
374	Pink Bollworm Control in Florida (47 frames)	.45
376	Mosquitoes and Their Control (48 frames)	.45
384	Insects and Mites of Mushrooms (48 frames)	.45
399	Insects, Their Growth and Structure (44 frames)	.45
404	The Housefly and Its Control (35 frames)	.45
405	Horse Bots and How To Fight Them (39 frames)	.45
407	The Hessian Fly and Its Control (38 frames)	.45
420	Subterranean Termites and Their Control (48 frames)	.45
431	Insect Pests of Stored Tobacco (46 frames)	.45
443	The Cotton Flea Hopper and Its Control (41 frames)	.45

Series		Price
446	Insects of Tobacco in Florida and South Georgia and Their Control (46 frames)	$0.45
448	The Mexican Bean Beetle and Its Control in the East (39 frames)	.45
449	Pea Weevil Life History and Control in the Northwest (47 frames)	.45
457	The Bedbug and Its Control (40 frames)	.45
499	Insect Enemies of the Flower Gardens (58 frames)	.50
503	Insect Pests of Garden Vegetables and Their Control (63 frames)	.50

By addressing the Director of Extension Service, United States Department of Agriculture, Washington, D. C., information may be had on the costs of photographic prints, bromide enlargements, glass slides, and the cost of Department film strips on subjects other than those listed herewith.

State workers may prepare film strips on local subjects and have them made under the Government contract. Information thereto will be gladly furnished.

PROGRAM OF THE EXTENSION SECTION

AAEE

Richmond, Va., Dec. 29, 1938
7:30 p. m.

W. E. Blauvelt, Chairman — W. C. Nettles, Secretary

Realizing that each person can absorb only a certain amount of information, the emphasis of the Extension Service is shifting from the issuance of so much general information to the analysis of the problems and stressing those problems that are most pressing and of most general importance. Insects play an important part in the well-being of mankind, and many agencies are involved in serving the public. This program is arranged to bring out some of the fundamental problems confronting these agencies.

1. What are the extension problems in the classroom teaching of entomology?	Clay Lyle H. E. Hodgkiss R. W. Leiby
2. What are the extension problems in the larger insect-control programs?	S. L. Crosthwait C. O. Hopkins George Jones

3.	What are the extension problems in the entomology-research programs?	P. N. Annand J. O. Pepper W. E. Blauvelt
4.	What are the extension problems with commercial entomology?	E. A. Richmond C. Graham W. P. Flint
5.	What are the extension problems with the retail insecticide trade?	G. E. Lehker C. B. Dibble W. A. Ruffin
6.	What are the extension entomologists' problems with other extension agencies?	J. O. Rowell J. M. Amos H. L. Parten
7.	The logical extension approach in meeting the insect problems.	H. W. Hochbaum
8.	Summary	M. P. Jones

Election of Officers

Adjournment

ARTICLES

(The following article was prepared in behalf of the cotton farmer, but applies equally well to all farmers, in fact, to people everywhere. These comments should provide us with food for thought in making plans for next year's work. M. P. J.)

WEATHER AND COTTON PESTS
Cotton and Cotton Oil Press

Recent rains through several days of cloudy and cool weather have served to emphasize the need for more extensive and thorough control of insects that ravage our cotton crops.

The boll weevil especially thrives on cloudy, cool weather, and rains wash off the poison applied for its destruction, so that the kind of weather we had for so many days not only multiplies the insects but hinders the means of control. Such conditions tend to intensify the proneness of the average cotton farmer to let nature take its course and to accept the loss of insect damage as one of the inevitable hazards of cotton farming.

It is hardly too much to say that the chief impediment in insect control is the attitude of the average farmer. The scientists of the United States Department of Agriculture and of our agricultural colleges have

developed successful methods of control of most of the insects which cause loss to the farmer, but because many of the insects are subject to more or less control by weather or other conditions which occasionally occur, the farmer is inclined to trust to the recurrence of such conditions. Control by scientific methods involves both expense and extra labor--expense of equipment, in the first instance, and of poison and application which may have to be repeated at considerable cost.

Moreover, most farmers are slow to accept scientific methods; many of them are skeptical, some are ignorant, and not a few are too lazy to study or to execute the programs of control which the scientists set up. When the process of control of the boll weevil by dusting with calcium arsenate was first promulgated by the Department of Agriculture it was resisted not only by many farmers who sought an easier and simpler "cure" but by many wiseacres of the cotton trade who insisted that it was folly to refrain from dusting until there was a 15 percent infestation; these skeptics contended that this delay was comparable to keeping the fire department away from the fire until the house was well-nigh consumed. It took a long time to make them understand that the cotton plant would shed more than 15 percent of its squares and that dusting for an infestation below that degree was merely a waste of poison and labor.

Hence the main point of effective insect control lies in the education of the farmer--education in the science of control, education in the economy of control, and education in trust of scientific methods. The farmer encounters so many vicissitudes of weather and markets, which he knows he is powerless to control or modify, and he comes to feel that so much of his success or failure is due to blind chance or luck, that it is natural for him to face insect calamities with the same sense of helplessness that he faces bad weather or disorganized markets.

The farmer must be impressed with the demonstrable fact that insects for the most part can be controlled, that control depends upon his own preparedness for infestation and his diligence in applying the necessary poisons, and that any reasonable outlay in equipment and poisons is a good investment, and bankers and other creditors upon whom he relies for financing his operations need to be impressed with the fact that insect control is a profitable form of insurance of the contract debt.

The Department of Agriculture and the agricultural colleges have done much to educate the farmer in these proved processes and principles of successful farming, but they can do much more if they are provided with the necessary funds. They are the most efficient teachers; they have knowledge and they have the organization through the county agent system to impart it. The problem of insect control, therefore, becomes almost entirely a matter of financial support of these great agencies. Too much emphasis cannot be laid on the earnest effort now being made by the commercial and industrial interests in cotton processing and cotton merchandising to obtain the necessary funds.

The Cotton Digest
August 13, 1938.

1449-38

TEACHING AIDS

A. B. Graham

Let us consider the outstanding avenues of approach to our minds. We get most of our messages through sight. That characteristic is called eye-mindedness. We receive a great many messages through the ear, and that is called ear-mindedness. We receive many other messages through the tactile senses and this is commonly called manual-mindedness because we handle things with our hands, but it may be any sense of touch--the learner jumps into a job and helps to do it. This performance is always very important because through participation we learn the details which otherwise would be learned with great difficulty. Everybody is eye-minded, ear-minded, and manual-minded. Some are more dominantly one way than another. The "tools" for teaching must be used to reach the individual through all of these entrances to his mind.

HOW TO WRITE FOR THE FARM PRESS

P. D. SANDERS
Editor
Southern Planter

1. Limit yourself to a given number of words.

2. Outline the salient points of the subject.

3. Hook them together with short terse sentences. Be epigrammatic. When in doubt use a period.

4. Write it in the first person. I came, I saw, I conquered.

5. Go over the manuscript and strike out half of your adjectives. More as you grow stronger.

6. If there are any sentences or phrases that especially appeal to you strike them out. They mean more to you, than to your reader.

7. Where possible, use illustrative material. Your story in pictures leaves nothing untold.

8. And, finally, whatever you do, use simple language. Call a spade a "spade," and not an instrument of manual husbandry.

VISUAL TEACHING AIDS

C. D. Lowe
Extension Animal Husbandryman

Visual teaching aids, such as charts, posters, film strips, circular letters, and similar materials have long since proved their value in extension work. Practically all specialists have utilized them to a greater or less degree at one time or another. Some specialists have used such materials to a greater extent than others for distribution to county agents, local leaders, and other cooperators in the furtherance of their projects. Since emergency duties have been engaging so much of the time of practically all specialists, one of their pressing problems is how to keep their regular work going without the opportunity to give it the usual amount of personal attention. Local workers likewise have had even more to interfere with their normal contact with regular projects and hence are in woeful need of any type of assistance that will save time and effort.

It therefore seems important that subject-matter specialists take full advantage of all existing opportunities to supply local workers and cooperators with every possible tool which will aid them in advancing such projects that have as their aim greater efficiency in production and an increased quality of product.

The facilities of the United States Department of Agriculture are available to supplement those of the various States in the production of such materials, and of course a great deal of material suitable for such use is constantly being produced by both State and Federal agencies.

Quite a number of State specialists have done splendid work along this line, especially since the advent of the emergency programs, and it is believed that reports from them would be well received by other workers in the same field. If such workers will favor with examples of how they have been able to expand their field of usefulness by resorting to the preparation and use of such visual aids, space will be given to same in this publication.

Such reports should include specifically the materials which have been made available and how they have been used in the furtherance of project objectives, together with an appraisal of their value in terms of time-saving and general efficiency.

It is believed that all who respond to this suggestion will be amply repaid for their effort for the "other fellow" very likely will give you a new idea. And remember that to the "other fellow" you are the "other fellow." How about it?

4-H OBJECTIVES
Land-Grant College Report, May 1935

4-H Club work is a specialized educational enterprise for rural youth. As such, it shares in the objectives common to all educational institutions and movements in its concern with the development of individual abilities and capacities for learning, intellectual and moral character, qualities of citizenship, and the like. Its distinctive educational objectives are:

1. To help rural boys and girls to develop desirable ideals and standards for farming, homemaking, community life, and citizenship, and a sense of responsibility for their attainment.

2. To afford rural boys and girls technical instruction in farming and homemaking, that they may acquire skill and understanding in these fields and a clearer vision of agriculture as a basic industry, and of homemaking as a worthy occupation.

3. To provide rural boys and girls an opportunity to "learn by doing" through conducting certain farm and home enterprises and demonstrating to others what they have learned.

4. To teach rural boys and girls the value of research, and to develop in them a scientific attitude toward the problems of the farm and the home.

5. To train rural boys and girls in cooperative action to the end that they may increase their accomplishments and, through associated efforts, better assist in solving rural problems.

6. To develop in rural boys and girls habits of healthful living, to provide them with information and direction in the intelligent use of leisure, and to arouse in them worthy ambitions and a desire to continue to learn, in order that they may live fuller and richer lives.

7. To teach and to demonstrate to rural boys and girls methods designed to improve practices in agriculture and homemaking, to the end that farm incomes may be increased, standards of living improved, and the satisfactions of farm life enhanced.

SPRAY RINGS IN BEAN BEETLE CONTROL

R. W. Leiby
New York

In connection with a threatening invasion of field (dry) beans by the Mexican bean beetle in five counties in New York, three dusting rings were organized last spring to control with rotenone or calcium arsenate-lime

dust, the first and second generation larvae. Two of the rings needed to function, the other was in a section where bean beetle was not very abundant.

The dusting rings operate similar to the potato spray rings. A machine is purchased by a half dozen growers and used as needed by a trained operator on from 75 to 100 acres of beans. In one instance a local feed and seed house purchased a duster and rented it at 25 cents per acre, and this arrangement also proved satisfactory.

In organizing a dusting ring, a form contract is drawn and signed by each member. A treasurer-chairman is selected. The machine is re-evaluated at the end of each season, when a shareholder may withdraw and cash in at the current value of his share and another may take his place. Banks readily agree to advance the cost of the machine for 2 years with a payment to be made at the end of a year.

The bean beetle threatened a 25,000-acre crop of field beans during 1938. In a few instances, 3- to 5-acre fields were completely destroyed by the first generation larvae. Dry weather and disease hastened maturity of the beans so that many were harvested before the second generation could feed extensively. This materially reduced the potential number of beetles to go into hibernation this month.

COMMUNITY U. S. D/ A/ MOVIES

George Felkel, County Agent
Oklahoma

"That picture has taught me some good lessons. I'll get some pine tar and benzol and be ready for next summer," said a prominent farmer of Woods County, Okla., after seeing the Department picture, Control of Screw Worms in Livestock. He is only one of the 10,000 persons who have attended the programs of the Woods County visual education work carried out by County Agent George Felkel in cooperation with the county rural schools, the Northwestern State Teachers' College, and the Chamber of Commerce of Alva, Okla. County Agent Felkel operates the motion-picture projector at the meetings. He selects educational pictures pertaining to agriculture to interest the farmers, their wives, and their children. Usually, two or three talking pictures are shown at each program. The college bought the motion-picture projector, a 16-millimeter outfit with both silent and sound equipment. The college also owns a film-strip projector which is used on various occasions. The Alva Chamber of Commerce furnished the trailer on which the generator is mounted. The Chamber of Commerce includes sufficient funds in the annual budget to take care of the expenses of putting on the movies, as there is no admission charge to these meetings. The county superintendent of schools has consistently cooperated in the work.

ANNUAL REPORT EXCERPTS

Vegetable Garden Insects

During the past year we have cooperated with supervisors in charge of relief gardens, home and commercial gardeners, city and country garden clubs, home demonstration clubs, and 4-H garden clubs. The meetings have been largely demonstration meetings where persons interested were taught to recognize the different common insects and types of injury, insecticides recommended for insect control, equipment for dusting and spraying, and methods of applying insecticides. One of the major problems connected with insect control in home gardens is availability of recommended materials. Therefore dealers have been contacted in localities where meetings were held and advised regarding materials to be carried in stock.

A chart has been provided listing the insecticides and pointing out such pertinent facts as, how used, insects affected, advantages and disadvantages. This has been made available to dealers and county agents for use as a reference guide.

1937 Indiana Entomology Annual Report.

Vegetable Insect Control Publicity

This phase of the work is done through the channels of (1) a weekly news letter, (2) special articles to county agents for use in Farm Bureau news or for sending direct to farmers, (3) press articles, (4) radio talks over WGY and WESG stations, (5) extension and station bulletins, (6) insect exhibits at county fairs, and (7) various public talks.

A total of approximately 75 pages of single space subject matter on vegetable insects and their control was mailed during the year to county agents through the medium of the weekly news letter issued each Monday during the growing season in connection with news matter on fruit insects.

Six special articles were sent to county agents.

About 12 press articles on as many different insects were released through the department of publicity. One of these concerned fleas as pests in houses and upon pets. Records show that this article was widely used, since cat and dog fleas were unusually troublesome during the summer. This office has a record of the flea story appearing in 129 papers in the State, totaling 815 inches of space. Other news articles concerned the habits and control of the Mexican bean beetle, the rhubarb curculio, spraying of home orchards, cutworms, etc.

The department's insect exhibit was used at three county fairs during the year by county agents. It was also displayed at the State potato and vegetable growers' show held in the winter. Insect exhibits invariably

attract public attention and afford easy opportunity for extension contacts and consequent insect-control explanations.

1937 New York Entomology Annual Report.

Crops Saved by Insect Control

Thirty-seven counties report that $10,160,497 were saved Colorado farmers and ranchers as a result of adopting insect-control practices advocated by the extension service. This figure appears inconsistent with the report furnished by 28 county agents that $10,807,591 were saved Colorado farmers by the grasshopper campaign alone. The explanation of these conflicting figures is that the grasshopper figures were supplied the first of September and by annual report time some agents had lowered their estimates because of general drought conditions and late 'hopper injury by migrations to new territory.

Savings resulting from farmers following advocated entomological practices reached a figure of 10 million dollars is thought to be a very conservative estimate for the State. Agents have been trained through their grasshopper-control reports to make careful saving estimates by crops, but in many counties not in the grasshopper area, agents have not had this training and some do not make estimates at all.

Colorado Entomology Annual Report, 1937.

Household Insect Control

Cherokee County reports that there were 21 enrolled in household-insect control and that all completed their projects and made reports. Fourteen fly traps were made and put into operation.

Summary household-pest control

Number of demonstrators enrolled	193
Number reporting	138
Number of fly traps made and used	476
Number of household-pest control demonstrations given	132
Number in attendance at demonstrations	2,070

Kinds of pests:

Crickets, moths, roaches, bedbugs, flies, weevils, mice, silverfish, mosquitoes, termites.

Control methods used:

Bulletins, poisons, gasoline, sprays, formulin, traps, kerosene, destruction of breeding places.

1937 Oklahoma Entomology Annual Report.

Looking Forward

The work next year will be conducted along the same lines followed in 1937.

Surveys will be made to determine the prevalence and distribution of chinch bugs and Hessian fly. Timely letters will be sent to the county agents to enable them to meet these problems intelligently and arrange campaigns of control, if such are deemed necessary.

In the field of vegetable growing, the general use of insecticides nontoxic to man will be stressed. Pyrethrum and rotenone products are rapidly demonstrating their value in this field and we are learning more about what insects can be controlled by them.

Cultural methods will be stressed wherever possible, and especially among northern Ohio grape growers, who are unable to control grape berry-moth under the present restricted spray schedule.

Codling moth will be given a major share of our time, and bait pans will be the chief instrument for determining codling moth activity and for timing the early sprays. We look forward to the assistance of a graduate student in gathering this information for the spray service.

The use of bees as pollinators will be stressed as in the past for orchard fruits and seed production. Methods of efficient honey production and proper wintering of bees will be taught through news letters and demonstrations.

County agents will continue to act as leaders in the insect-control work carried on within the county.

We have enjoyed the cooperation of the United States Department of Agriculture, State department of agriculture, and Ohio Experiment Station in carrying on surveys. We have utilized their literature to extend our work.

The specialist will continue to use commercial and horticultural agencies, both of which he has found very helpful in amplifying the proper use of insecticides in the field. Both wholesale and retail insecticide dealers have cooperated with us in recommending methods of control that have proved most valuable through experimentation.

Commercial radio stations, as well as the university radio station, have been exceedingly helpful in extending our spray-service information. Special mention should be made of stations WLW, Cinncinnati, Ohio; and WTAM, Cleveland, Ohio. They have granted us, without cost, 5 minutes of their time 3 days a week, between April 1 and July 1.

As we look back over 1937 we are not satisfied with our accomplishments and yet are impressed with the fact that farm people are pretty securely anchored to the cause of scientific production methods and the teachings of the extension specialists.

Ohio Entomology Annual Report, 1937.

TIMELY TOPICS

More White-fringed Beetle Infestations

White-fringed beetles have recently been found on several properties in Bolton, Hinds County, Miss. (about 150 miles north-northwest of Gulfport), representing the most northerly infestation located thus far. An area of approximately 200 acres is known to be infested and the limits are not yet determined. Owing to proximity of the infestation to the Mississippi Delta, immediate action was taken to start dusting operations and to insure the cleaning up of railroad yards and other industrial premises, the owners cooperating fully. An infestation was also located in Pearl River County, in southern Mississippi. The well-developed inspection activities now under way in the State include both a survey campaign throughout the State, assisted by public-spirited organizations and citizens, and a systematized inspection on the part of Federal and State inspectors. Similar work is carried on in other known infested States, and spot inspections are being made in Georgia, Texas, Tennessee, South Carolina, and Arkansas.

Pyrethrum in Kenya

A Science Service item by Robert D. Potter says in part: "The highlands of Kenya in East Africa, just south of Ethiopia, are the newest spot where attempts are being made to grow pyrethrum flowers, whose extract goes into insecticides that must be harmless to man and animal. Fly sprays are a major product using pyrethrum although it enters into the composition of certain sprays for garden crops. . .Japan produces about 95 percent of the world's pyrethrum and the United States, using some 20,000,000 pounds a year, is half of the world market. . .A report in Industrial and Engineering Chemistry on the Kenya pyrethrum plantings and harvest shows that the little flowers of African cultivation are superior, in their potency, to the Japanese variety. While pyrethrum plants have been grown in many parts of the world--California, Lancaster, Pa., and Colorado are three American examples--it is only in Kenya that a product superior to that of Japan is obtained."

More on Dichlorethyl Ether for Peach-Borer Control

In cooperation with the Illinois State Natural History Survey, experiments with dichlorethyl ether (30 cc per gallon of water), applied around each tree early in the spring for the control of the peach borer, were conducted in southern Illinois. Oliver I. Snapp, in charge of this work, has submitted the following table, summarizing the results obtained on April 11-13 from this material applied on March 16, 17, and 19.

Dosage of dichlorethyl ether	Age of trees	Results		
		Total borers	Borers dead	Tree injury
	Years	Number	Percent	
1 pint	10	29	93.1	None
3/4 pint	10	16	87.5	"
1 pint	10	31	100.0	"
3/4 pint	10	30	100.0	"
3/4 pint	4	97	91.8	"
1/2 pint	4	112	82.1	"
1/2 pint	2	26	80.8	"
1/4 pint	2	15	66.7	"
1/2 pint	2	9	88.9	"
1/4 pint	2	9	88.9	"

The soil around the trees received no preparation whatever before the dichlorethyl ether was applied, and the application of that material was made by pouring the dose from a half-pint tin cup around the base of the tree, which wetted the soil immediately surrounding the tree, and the lower part of the trunk received some of the liquid during treatment. The treated surface was covered with a little soil. Although not quite so effective as ethylene dichloride emulsion, dichlorethyl ether, a water-soluble material, gave very good control of the peach borer in most of these early spring experiments at a time when paradichlorobenzene crystals gave practically no control, because the soil temperatures were too low for that material to be effective. The results confirm those of previous experiments in that this material is more effective against the peach borer and safer for use around peach trees during cool or cold weather.

Orchard Owners Helped

Belmont County orchard owners got a head start on their 1938 spraying program by one meeting in which Mr. I. P. Lewis, fruit grower and member of the experiment station staff, discussed sprays. At the other meeting R. D. Barden tested sprayer pressure gauges for accuracy, and manufacturers demonstrated their newest sprayers. Lawrence Daniels, assistant county agent, says the two meetings cleared up many points for the growers.

Mr. Lewis, in reply to questions about flotation sulfur sprays, said the material was too expensive for him to use in his own orchard and that the poor man's spray, lime-sulfur, was his choice. Those attending the meeting accepted this statement as being practical for home use.

One local horticulturist came to the sprayer repair demonstration with the pressure gauge from his outfit to show that he approved the meeting and its purpose although he knew his own sprayer needed no attention. His gauge was the first one tested and was inaccurate by a margin of 150 pounds. Several growers then left the meeting to get the gauges they had failed to bring with them.

Four manufacturers had sprayers at the meeting and demonstrated their operation. The orchardmen could see them all working and could make comparisons which permitted choosing the one most suitable for their orchard conditions. One manufacturer sold both outfits which were demonstrated at the meeting.

Sleeping Sickness

An item by George Turrell in Country Life and The Sportsman (September) says in part: "Since last year about this time when we received their first reports on the subject, the Horse and Mule Association of America has made considerable progress in the study of the plague of sleeping sickness in horses that had been prevalent in the Middle West. This disease affected approximately 157,984 horses in 1937. In Minnesota where it was most pernicious, the disease appeared on 29,676 farms where 157,483 horses were owned. Only 41,159 of these horses had the disease, or at least only this number was reported to be noticeably sick with it. Of this number 9,200, or 22 percent of those sick, died. Wayne Dinsmore, the secretary of the Association, says that most of the horses were lost because of failure to treat promptly. He also says that when the disease appears in a community, 75 percent of the horses probably will completely escape it, even if nothing is done, and if proper preventive measures are used, 99 percent should escape infection."

Mixture to Control Biting Lice of Cattle

The North Dakota Agricultural College experiment station has obtained the most satisfactory results in the control of biting lice of cattle by the application of either one of the following mixtures: (1) sodium fluoride 1 part to wheat flour 2 parts, or (2) sodium fluosilicate 1 part to wheat flour 4 parts.

Any choice between the two dust mixtures mentioned above depends solely on the availability of the chemicals and local prices.

"The dust is most conveniently applied by the use of shaker-top container. We found that 2 or 3 ounces of the powder dusted over the backs of the animals were sufficient to bring about satisfactory control of the

biting lice without causing any danger to the animals. One application was sufficient.

"Following application of the dust, animals should be curried so as to work the dust to the base of the hairs and to aid in distributing the dust particles. Either of the dusting mixtures given above should be handled with care since they are poisonous."

The dust mixtures given here are useful only in the control of the biting type of lice.

The Complexity of Calcium Arsenate as Revealed by Chemical Analysis of Fractions of Different Particle Size

Mr. Goodhue and C. C. Cassil, of this Division (Insecticide Inves.) have reported that when commercial calcium arsenate is separated into fractions of different particle size by an air classifier the different fractions have different chemical composition. The fine particles contain more arsenically combined calcium oxide than do the coarse ones and, as a result, much less water-soluble arsenic. Their results are described in the Journal of Economic Entomology (Vol. 31, No. 2, pp. 278-280. April 1938).

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